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05 October 2013

Version of attached file:

Published Version

Peer-review status of attached file:

Unknown

Citation for published item:

Liu, M. and Wezel, F.C. (2013) 'Small is beautiful? Organizational identity and growth rates in a partitioned market.', Working Paper. Durham Research Online (DRO), Durham.

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Small is beautiful? Organizational Identity and Growth Rates in a Partitioned Market

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Version

June 2012

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Abstract

The present paper aims at contributing to the discussion on the determinants of organizational diversity by illustrating the process of identity-based resource partitioning observed in the German electricity market after deregulation from 2001 to 2008. We contend that the demise of regional utilities contributed to sharpen the identity of municipal utilities as oppositional identities to that of nation-wide utilities, ultimately creating durable boundaries among forms. Identity-based partitioning however heterogeneously affected the growth of municipal utilities due to the substantial differences in terms of strategies and endowments such firms. The potential ramifications of peripheral firms' success on the distinctiveness of their collective identity and, thus, for the durability of diversity are discussed.

Introduction

The study of the evolution of organizational diversity is central to a broad range of research streams such as industrial organization (Tirole, 1988), strategic management (Porter, 1980), institutional theory (DiMaggio and Powell, 1983) and organizational ecology (Hannan and Freeman, 1977). The scholarly interests in organizational diversity derive from its broad implications for individuals, organizations, industries, markets and societies in general. Diversity impacts individual career opportunities (Hannan, 1988), stimulates entrepreneurial activities (Greve, Pozner & Rao 2006) and innovation (Bain, 1956; Scherer, 1980), influences industrial evolution and market structures (Carroll, 1985), and impinges on the production of culture (Peterson and Berger, 1975) and collective actions aiming at societal changes (Olzak and Ryo, 2007).

Resource partitioning theory (Carroll, 1985) is a theory fragment within organization ecology directly concerned with the emergence of organizational diversity. This theory argues that the competitive process dictated by economies of scale drives smaller generalists out of the market. The few survivors grow larger and eventually come to dominate the market, increasing market concentration. As covering the whole market range is not in line with the strategies of these firms, peripheral demand is left unsatisfied. A different type of firm – i.e., specialists -- emerge to target this unmet demand. Empirical support for resource partitioning has been obtained from a wide variety of industries such as telephone, cooperative banking, airline, beer brewing, wine making, newspaper, auditing and car manufacturing (for a review see Carroll, Dobrev & Swaminathan 2002).

A key assumption of resource partitioning pertains to the equilibrium associated with the ensuing segmentation – i.e., to its durability, see Polos, Hannan & Carroll, 2010. This view appears at odds with that of other scholars who have argued in favor of cyclical processes of market concentration and diversity (e.g., Peterson and Berger 1975). We aim at

contributing to this stream of research by discussing the forces that may challenge or, conversely, prolong the durability of resource partitioning within a market. In particular, our arguments will center on: (i) how oppositional identities contribute to organizational diversity through the creation of durable boundaries among forms (Carroll and Swaminathan, 2000); and (ii) how identity based partitioning may heterogeneously affect peripheral organizations due to substantial differences across such firms in terms of strategies and endowments. Eventually, the enduring success of peripheral firms may contribute to challenge the coherence of their collective identity and to blur its distinctiveness with respect to market leaders.

To reach these goals, we will rely on two recent developments of resource partitioning. First, empirical evidence (Carroll and Swaminathan, 2000) suggests that identity differences – rather than scope diseconomies as originally argued (Carroll, 1985) -- are fundamental to the durability of resource partitioning. Indeed, in the US brewery movement, the success of specialist breweries did not rely on a different quality of the output. What mattered was the difference in the identity of the producers which sustained the emergence of market partitioning. Second, recent theoretical developments emphasized competitive release as the critical trigger of partitioning and distinguished three producer segments: center, near-center (those that by failing contribute to release resources) and peripheral producers (Hannan et al., 2007; Polos, Hannan & Carroll, 2010).

The goal of this paper is therefore twofold. First, we aim at providing evidence about the theoretical mechanism of competitive release and to illustrate the larger benefits gathered by peripheral organizations compared to local subsidiaries of center organizations. Second, we wish to move beyond the average beneficial effect of partitioning on peripheral organizations and to illustrate the substantial differences among peripheral organizations in terms of identity claims and identity matching. The constructs of engagement and intrinsic

appeal (see Hannan et al., 2007) will be employed to capture such differences. As identities of peripheral producers are often rooted into size differences compared to market leaders, we will focus on firm growth rates. Because a mixed method -- i.e., qualitative and quantitative - is employed to explore our research questions, the next section is meant to introduce the reader to the empirical context under investigation.

The Empirical Setting

The German electricity retail market after deregulation offers an excellent context to study the effects of competitive release and organizational identities on market partitioning. Being a commodity market, product differentiation is minimal as compared with consumer product markets such as beer or wine. The empirical counterpart of specialist (i.e., peripheral) organizations are municipal utilities (thereafter MUs). As the collective identity of MUs is a driving force of partitioning after deregulation, we first provide information about its origins. MUs in Germany have a long history. Since the late 19th century's urbanization of the German cities, prompted by the concerns for their residents' wellbeing, the local authorities started to provide gas, electricity and water supply as well as services in sewage, waste removal and public transport through the local MUs. By providing these services, local authorities acted in the interests of "the common good of the local community" (Wollmann, 2002). The surpluses generated by the profitable parts of the MUs like electricity, gas and water supply, were used to cross-subsidize the deficit parts like public transport and sport facilities (Wollman, 2002; Püttner, 1999: 543). The generated profits enable local authorities to pay for common interest activities such as maintaining kindergartens, schools and streets.

Before the deregulation, around 900 electricity suppliers served German end customers including industrial, commercial and household customers in their respective monopoly regions (Die Welt, 1998). In 1997, eight utilities (the "Big Eight") operated at the

supra-regional level and around 80 companies operated at the regional level. According to VDEW (renamed to BDEW since 2007), the German Association of Energy and Water Industries, in 1998 more than 700 MUs served end consumers in their municipalities with electricity¹. In 1996, EU introduced the Electricity Directive aiming to build an internal electricity market. Following this directive, the member states started to deregulate their national electricity markets within the next 2 years. Germany opened its electricity market to 100% competition at once in 1998, meaning that all end customers could purchase electricity from any supplier in the market.

Before the deregulation started, many experts had expected high mortality rates among the MUs because electricity market is a market of homogeneous good with strong economies of scale (Die Welt, 1998; 1999). Since 1998, the market concentration increased considerably (German Monopoly Commission, 2007) as a result of the following processes. From 1998 to 2002, the “Big Eight” merged to “Big Four”(E.ON, RWE, EnBW and Vattenfall Europe) and their operations spread nationwide (thereafter NWUs). The growth of market center organizations came at the expenses of regional utilities. Out of the 80 regional utilities existed in 1998, more than half have been either totally absorbed or partially controlled by NWUs. The expected wide death of the MUs however did not take place (Die Welt, 2010). The aggregated market share of MUs in retailing actually increased from about 33% in 1997 to roughly 40% in 2006 (VKU, 2007). Contrary to the considerable customer loss that the NWUs suffered (Die Welt, 2008), the MUs enjoy a good image, and the trust and loyalty of their customers (Die Welt, 2009). The renaissance of the MUs is also discussed in the mass media (e.g. Financial Times Deutschland, 2008; Frankfurter Rundschau, 2009; Die Tageszeitung, 2010).

¹ Besides the cross-regional, regional utilities and MUs, the population of electricity suppliers includes also a small number of cooperatives and private firms, usually of small size.

Theory and Hypotheses

In developing our hypotheses, along with the theoretical arguments we will make use of the qualitative data obtained from four main sources. (i) Reports based on TNS Emnid survey (1999; 2003; 2005; 2009): the telephone surveys have been funded by VKU (the trade association for MUs) and carried out by TNS Emnid Market Research. The sample size for the year 1999, 2003 and 2005 is 500, for 2009 is 1000. (ii) Reports based on ifm study (2006): this study has been funded by the umbrella trade association BDEW (German Association of Energy and Water Industries) and conducted by ifm market research institute. The study consists of 60 in-depth interviews with household customers each lasting 1.5 to 2 hours, carried out by professional psychologists. (iii) Reports based on BDEW customer surveys (BDEW household customer survey, 1999-2009; BDEW commercial customer survey 2000-2009): funded by BDEW and conducted by PROMIT Institut fuer Prognose, Marktforschung & Informationstechniken with a sample size of 1200 household customers and 1040 commercial customers from 13 business areas. (iv) 11 semi-structured in-depth interviews we have conducted between 2008 and 2010, each lasting 1 to 2 hours. The interviewees include 6 MU managers and department chiefs, the chief of market data department of BDEW and the deputy executive of VKU. Three informant have been interviewed twice. In addition, we carried out a considerable number of unstructured interviews at industrial conferences or via telephone as well as extensive research of the German national and local newspapers through LexisNexis.

Competitive Release

Recent theoretical developments (Hannan et al., 2007; Polos et al., 2010) emphasize competitive release as the key trigger of resource partitioning. Competitive release refers to the “conditions that deliberate a population of organizations that had effectively precluded the emergence and growth of a focal population” (Hannan et al., 2007: 216; Polos et al., 2010).

Under scale-based competition, resources are released through the exit of near-center producers, which remove a competitive constraint from peripheral organizations. Besides freeing resources, the demise of near-center producers contributes to increase the contrast between center and peripheral forms (Polos et al., 2010). Two simultaneous forces induce this latter effect (see Zerubavel, 1996): the “lumping” of peripheral producers together and the “splitting” between center and periphery perceived by audience members. “Lumping” takes place when alike organizations cooperate and recognize the existence of a common identity in presence of a common enemy or a salient out-group (Hawley, 1986; but see also Pozner and Rao, 2006; Ingram and Yue, 2008). As a result of this cooperation among peripheral producers, a more coherent and salient peripheral identity emerged. At the same time, the “perceived unity” of the population is disrupted by the demise of the near-center producers (Hannan et al., 2007: 227) and by the increasing perceived contrast between center and peripheral forms.

Rising contrast between center and periphery tilts the competitive balance toward the latter -- i.e., organizations relying on ‘local’ identities (Hannan, 1979; Hannan et al., 2007). The essence of a durable resource partitioning is now established: peripheral organizations exhibit a sharper and increasingly oppositional identity and benefit from renewed attention from audience members. Thus we expect that in the context of organizational growth rates, peripheral organizations should profit the most from competitive release. Conversely, while center producers may expand their aggregate organizational size thanks to potential acquisitions, their local subsidiaries on average should benefit less from the competitive release – at least when compared to peripheral producers.

The description of the empirical context of this study made clear that valid counterparts of center, near-center and peripheral forms are NWUs, regional utilities and MUs. Qualitative evidence in the German electricity industry supports this claim. According

to ifm study (ifm 2006), customers perceive the identities of the NWUs and their “own municipal utilities” as distinct and oppositional. As illustrated in Figure 1, while the large corporations embody the omnipotent, uncontrollable and abstract aspects of electricity, the small and medium sized MUs provide to the abstract product of electricity a tangible and familiar face, well represented by the drawings of an interviewee in terms of the cosy and pleasant everyday life that electricity enables (ifm, 2006).

Insert Figure 1 about here

Evidence shows that the increasing contrast between NWUs and MUs indeed fuelled MUs’ growth. For example, the MU which is owned 100% by the municipality Wedel, started to acquire customers actively in nearby Hamburg from April 2007. In Hamburg, the energy market was dominated by two of the NWUs’ local subsidiaries: Vattenfall Europe in Hamburg- the decedent of the former regional utility HEW and E.ON Hanse- a regional branch of E.ON about 20 times as big as the MU Wedel (Zeitung fuer Kommunale Wirtschaft, 2007b). With its expansion into the home territories of the NWUs, the MU Wedel intended to “declare battle” against the energy giants (vwd Energy Daily 2007). In the marketing campaign, MU Wedel emphasizes its image of municipality owned, middle-sized company from the neighborhood, independent from the energy giants. This makes the municipal utilities for the Hamburger “already sympathetic”, according to the CEO of the MU (taz 2007). The MU Wedel matched its image with one of its newly gained customers- FC St. Pauli, a local soccer club – i.e., “Just like we as a small local company, the club also has to fight with passion and creativity against the big players with a lot money... a David-against-Goliath-situation”, as the CEO put it. As a part of the campaign, the MU Wedel humorously declared the Hamburg city district St Pauli as “30.000 Squaremeter Energy free of the Energy Giants” with a symbolic border and a toll keeper (taz 2008). The marketing

campaign was a success. More than twice of the expected number of customers in Hamburg switched from E.ON Hanse and Vattenfall Europe to MU Wedel.

Building on the arguments and evidence presented, we propose an hypothesis which juxtaposes the growth rates of peripheral and center organizations triggered under competitive release.

Hypothesis 1. The larger the competitive release due to the failure of regional utilities, the greater the marginal benefits of MUs compared to the subsidiaries of NWUs.

Beyond Homogeneous Peripheries: Variations of Intrinsic Appeal and Engagement

In the former section, we followed the spirit of traditional resource partitioning studies, which mostly concentrate on prototypical – i.e., average -- peripheral firms. In this section we challenge this view and concentrate on peripheral firms, the primary focus of resource partitioning. We contend that the MU segment, as much as any specialist segment (Carroll and Swaminathan, 2000), exhibits substantial heterogeneity across peripheral firms. More specifically, we challenge the average effect of resource partitioning along two dimensions: identity matching remains contingent on the fitness (i.e., intrinsic appeal) to audience preferences; and the intensity of the engagement with the claimed identity varies across firms as well. As for identity matching, the target audience of specialist firms has been considered as rather uniform so far (see e.g., Carroll, 1985; Carroll and Swaminathan, 2000). We challenge this assumption pointing to the differences in the intrinsic appeal of MUs across geographical communities (H2). Moreover, by taking a closer look on firm level actions (i.e., engagement), we will reflect upon the effects of engagement on organizational viability (H3). Last, we will advance that the co-existence of identity claims and identity matching allows peripheral firms taking full advantage of the opportunities generated by the

identity-based partitioning (H4).

Variations in Identity Matching: Intrinsic Appeal

The matching to audience tastes or characteristics may be defined in terms of intrinsic appeal (as inferred from an audience member's social position, see McPherson 1983). Higher intrinsic appeal leads to higher organizational fitness (Hannan et al., 2007; Hannan, 2010) – i.e., the matching to a local environment. Fitness refers to “a producer's ability to thrive within its environment – to obtain necessary resources, to persists, and to grow” (Hannan 2010). Higher intrinsic appeal is essential to reach greater organizational fitness.

Despite recent theoretical developments, the appreciation of heterogeneity among audience preferences remains an important but underdeveloped topic (Hannan et al., 2007; Kocak, Hannan & Hsu 2010). Audience preferences can be segmented along multiple dimensions. In this paper we use geographical communities as the basis for segmentation. In so doing, we rely on Hannan and colleagues' suggestion (2007: 302) that “a potential valuable extension... of audience segment would consider geography. We defined segment as subsets of an audience that are largely closed with respect to interaction and communication. Such closure often takes a spatial form: social networks tend toward spatial closure. Therefore, audience segments likely to form in spatial patches... Perhaps variation over local audience segments in the legitimation of categories also plays a role”. These considerations resonate with those of sociologists, economic geographers and organizational theorists who underscored the role of geographical proximity for the emergence of collective mindsets (e.g., Gould 1995; Hedstrom, 1994; Becattini, 1990; Romanelli and Khessina, 2005).

To properly consider identity matching with respect to intrinsic appeal, the relevant dimensions of the MU identity need to be introduced. After deregulation, with the exit of regional utilities, audience members started to perceive MUs as possessing opposite feature

values compared to NWUs. According to qualitative evidence and to a recent survey (TNS Emnid, 2009), *localness* and *environmental friendliness* became the two defining features of the MU identity. The prominence of these identity features remains consistent across the TNS Emnid surveys of 1999, 2003, and 2005. Customers associated MUs with “orientation on the common welfare of the local region”, “support for the local region” as well as “environmental friendly behavior”. In contrast, the NWUs are described as “profit seeking”, “flexibility”, and “customer orientation” (Figure 2). “Supply security” and “reliability” figure prominently in audience perception as well. Nonetheless, perceptions of security and reliability appear correlated to localness (ifm, 2006).

Insert Figure 2 about here

Localness appears as the most prominent MU identity feature according to the TNS Emnid surveys (1999; 2003; 2005; 2009). As shown in Figure 2, whereas 45% of the interviewees expect “orientation on the common welfare of the local region” and “support for the local region” from the MUs, only 9% think so of private utilities. This is consistent with the results of the ifm psychological survey (ifm, 2006). One of the most important customer type identified by this surveys is “local patriots”. This group of customers perceive both themselves and the MUs as deeply rooted in the local community. The local MUs belong to the taken-for-granted part of one’s living space like the school and bars. In other words, the MU is seen as a symbol of the community itself, with which citizens strongly identify. Thus they feel being obliged to show solidarity toward their MUs: “I think we in the region should hold together.” Alternative offerings from the NWUs are perceived as “assault” from outside attacking one’s own living space and should be fended off. It is therefore not surprising that attempts to privatize MUs are compared with “selling off family jewelry” (Tafelsilber in German) and have sparked off citizen referendums or even demonstrations in various

communities (e.g. Energie & Management, 2001; Süddeutsche Zeitung, 2008). Local pride also leads the local patriots to attach emotion to electricity, like a customer of the MU Dresden proudly declared: “this is Dresdener electricity” (ifm, 2006). An energy expert confirmed “the idea of ‘we from here’ is very powerful” and associated this with the comparably low switching rate of MU customers (Die Welt, 2010). Due to the strong attachment to their MUs, the local patriots tend to disregard market information. They show no interests in alternative offerings and appear as hardly price sensitive: they are willing to pay a bit more for the “local” electricity², and tolerant toward price differences (ifm, 2006).

Environmental friendliness is the second pivotal feature of the MU identity. Whereas 35% of the consumers associate environmental friendliness with MUs, merely 8% think so in relation to NWUs and other private utilities. The early years of the BDEW household and commercial customer surveys pointed out that both NWUs and MUs show image deficit with respect to environment relevant aspects” and urges its members to take measures (e.g. BDEW household customer survey, 1999; BDEW commercial customer survey, 2000). MUs provided energy saving tips in the own customer magazine, building photovoltaic arrays on the roof of the local kindergarten and constructing environmental friendly combined heat and power (CHP) generation capacity. In contrast, even when actively portraying themselves as environmental friendly (e.g. Die Welt, 2001), NWUs turned out to be unsuccessful. The factual high percentage of electricity generated by their coal plants and especially nuclear power plants have made their claims anything but authentic and the NWUs are duly called “nuclear utilities” (e.g. Der Spiegel, 2002; Financial Times Deutschland, 2010).

²On a technical standpoint it is impossible to tell whether the electricity one buys is local or not. One interviewee illustrates in the following way: imagine there are 5 rivers flowing into a lake. You take one glass of water from the lake and it is impossible to say that it is from river A. According to the ifm survey (2006), this seems to be well known among the customers being aware that “electricity is electricity” and the NWUs generate a majority of the German electricity anyway. However, the psychological effects of “local electricity” which is actually only distributed by the local MUs persists. This is similar to the phenomenon that people pay premium prices for “green” electricity.

While localness and greenness represent identity features common to every MU, the context within which each MU is located provides variations in matching between these identity dimensions and the preferences of local customers. In particular, we suggest that the growth rates of MUs should be higher in communities in which the intrinsic appeal of the MU identity is greater. In particular, the more a community espouses localness and greenness, the larger the growth rates of MUs:

H2. (Intrinsic Appeal) Under resource partitioning, the greater the MU identity appeals to the local audience (i.e., the greater the match between the two MU identity features and local audience preferences), the higher its growth rate will be.

Variations in Identity Claims: Engagement

Peripheral organizations vary also along the intensity of the identity claims made (see Carroll and Swaminathan, 2000). Indeed, peripheral organizations differ in their degree of engagement – a fundamental characteristic to convert intrinsic appeal into fitness, namely growth rates in our case. Engagement refers to producer actions like “(1) learning about the idiosyncrasies of the local subaudience and its aesthetics; (2) designing or redesigning features of the offering to make it attractive to that audience; and (3) trying to establish a favourable identity in the relevant subaudience” (Hannan et al., 2007: 179). Engagement activities aimed at developing and displaying credible signals of authenticity and commitments towards the claimed identities are especially rewarded (see Carroll and Swaminathan, 2000; Baron, 2004; Hsu and Hannan, 2005; Hannan et al., 2007). For instance, in their study on the American microbrewery movement, Carroll and Swaminathan (2000) found that brewpubs send strong signals of authenticity and demonstrate high engagement with audience members by displaying their production equipment in the store-front locations.

In our setting, one way to engage with local audience and to show commitment towards the claimed identity is to participate in cooperation activities with other MUs. As market concentration increased, the Big Four emerges as the prominent enemies and substantial threat to the MUs. In an industry where economics of scale play a crucial role for organizational survival, it is difficult for the small and medium-sized MUs to survive on their own. Thus many experts have predicted a wide death of the MUs (Die Welt, 1998; 1999). Due to their prominent position in the retail market, NWUs have attempted to lure the MUs to “cooperate” with them. However, many municipal utilities feared such an alliance as a threat to their identity. To the contrary, they preferred to emphasize that they are endowed with “a fundamentally different organizational philosophy and mission” – as stated by the chairman of the VKU (the German MU trade association) group of the Land Rheinland-Pfalz (Zeitung fuer Kommunale Wirtschaft 2007a). As a results, MUs preferred to cooperate with each other.

Cooperation among MUs not only suggests an authentic commitment to the MU identity, it also serves to increase the salience and uniqueness of the MU identity. These cooperation activities were rooted in the identity of MUs as municipal enterprises and into their care for their local communities. Cooperation is “to achieve critical size among the like-minded”, as the executive chief of Traunstein MU put (Zeitung fuer Kommunale Wirtschaft 2006a). As the MUs in Krefeld and in Neuss planned their cooperation with each other, their stated goal was “ensuring and extending their market position in the region and the maintenance of a customer-near, municipal oriented energy supply” (Energie & Management 2006). The mission of the MUs and the municipal cooperation groups is “the development of the local economic and living environment for a strong and worth-living region... strengthening the economic independent future of the municipal companies in a changing energy market”, according to the mission statement of KOS- a cooperation group of 14

municipal utilities from Upper Bavaria and Swabia (KOS Web page). The municipal cooperation groups see in themselves “Robin Hood against the Big Four” (Zeitung fuer Kommunale Wirtschaft 2006b). Another example is the MU cooperation SüdWestStrom. Over 60 regional MUs declared their areas as “EnBW (one of the Big Four)-free” zone and formed the cooperation group to support each other to remain competitive and independent of NWUs (Stuttgarter Zeitung, 2008). The members of the cooperation group supported local communities through sponsoring local events, engaging in collective campaigns that highlighted their care for local citizens, and more importantly, allowed building environmental-friendly power generation capacity (SüdWestStrom web page). Compared to MU’s well received local engagements, NWU’s efforts appeared unconvincing. For example, EnBW conducted a campaign in the local press of Baden-Württemberg claiming their local and environmental friendly investments. The director of MU Tübingen publicly labelled this effort as unauthentic: “we pay dividend in Tübingen and not in Paris”, pointing to EnBW’s shareholder- the French nuclear giant EdF (Stuttgarter Zeitung, 2008).

Building on these arguments, we advance that substantial differences among peripheral firms may exist in terms of the intensity and credibility of their engagement with the claimed identity. In particular, we propose that the higher the level of commitment exhibited by the focal MU to the identity claimed, the greater its growth rate will be:

Hypothesis 3 (Engagement). Under resource partitioning, the higher the lever of a MU’s engagement, the higher its growth rate will be.

Interaction between Intrinsic Appeal and Engagement

While the credibility of an MU identity claim and its matching to local preferences may act independently in increasing the growth rates of MUs (see H2 and H3), it seems intuitive to think that the co-existence of these two conditions further amplifies the benefits gathered by MUs. Indeed, according to the model of Hannan and his colleagues (2007) when

both intrinsic appeal and engagement are non-zero, fitness (e.g., growth rates) should be the highest. In particular, engagement should play a crucial role in the relationship between intrinsic appeal and fitness. In presence of a good match between an organization identity and local preferences, engagement will boost fitness. In a similar vein, intrinsic appeal should amplify the effect of engagement on fitness. Better fit with local tastes will obviously make a credible identity claim appear more authentic and more convincing. To take an extreme case as an example, large NWUs invested great effort (and money) to communicate their local image to the target audience through massive marketing campaigns. Nonetheless, the lack of intrinsic appeal of their identity in the eyes of local audience members reduces significantly the returns from fitness. Therefore, we propose the following hypothesis:

H4. Under resource partitioning, the positive returns of intrinsic appeal for MU growth rates are amplified at higher levels of MU engagement.

Data and Methods

Data Source

To test our hypotheses, we have collected various datasets. The first data set concerns the annual electricity retail sales to household customers from 2001 to 2008.³ We chose to focus on the household customer segment because we expect the hypothesized effects to be stronger among household customers rather than, e.g., large industrial firms. The data were primarily obtained from the BDEW annual data publication (BDEW Jahresdaten der Stromversorger 2001-2008). As the umbrella trade association for the German electricity and

³ Covering the industry from 1998 – i.e., the year in which the deregulation started -- is not possible for two reasons: first, there existed no data for 1999 and 2000; second, although we have sales data for 1998, the categorization of end customers was different. In contrast to the three segments categorization (household, industrial and other customers) from 2001, only two segments (customers paying normal tariff rates and customers paying non-tariff rates specified in a contract) were distinguished in 1998. Whereas the non-tariff customers were dominated by industrial customers consuming large amount of electricity, tariff customers include both household customers as well as other customers such as small shops, office spaces etc.

water industry, BDEW's (previously VDEW) members represent over 90% of the electricity retail market share (BDEW web page). The final data set therefore consists of 573 MUs and 15 subsidiaries of NWUs in the German electricity industry, covering about 80% of the entire population of NWUs and MUs.

To measure the matching of the MU identity to local preferences, we collected data from the German Federal Statistical Office Web Site about the socio-demographic statistics of the 439 counties of Germany. The coverage of the data ranges from 2000 to 2007. As for the identity claims of each MU, we obtained information on cooperation activities from the data collected by BDEW and VKU. The information gathered from the home pages of MUs and from various cooperation groups, as well as from German national and local newspaper articles using LexisNexis, served to double-checked and complement the data collected.

Variables

Dependent Variable

Our dependent variable is organizational growth. We measure *Size* using the retail sales of electricity to households in MWh (megawatt hour). Other common size measures are annual revenues and number of employees (e.g., Khaire 2010). Annual revenues from electricity retail sales is not feasible here because electricity prices showed great volatility over the period under study (Monopoly Commission, 2007). Number of employees turned out to be not suitable in our context because the MUs usually have other business areas such as gas, water, heating and the allocation of employees to the different business areas is difficult. We log-transformed *Size* to reduce its skewness.

Independent Variables

Competitive Release. The variable *Competitive Release* was calculated as the size (sales to end customers) of each failed regional utilities in a given year, weighted by their

distance to each of the focal MU or an NWU subsidiary. Due to their exit after deregulation, we used the size of failed regional utilities in the year 1998. The distance an MU or a NWU subsidiary i to a failed regional utilities j by applying the “Great Circle Distance Formula” :

$$Dist_{ij} = r \cos^{-1} \left[\sin(lat_i / c) \sin(lat_j / c) + \cos(lat_i / c) \cos(lat_j / c) \cos(long_j / c - long_i / c) \right]$$

with r denoting the radius of the earth in kilometres and c being a constant of $180/\pi$ which is necessary in order to convert latitude or longitude from decimal degrees to radians. The latitude and longitude of each firm has been obtained from “Google Map” using the function “LatLng Tooltip” in “Maps Labs” (see also Beck et al., 2010). In a second step, we weighted the distance with the size of the failed regional utilities to calculate the *Competitive Release*:

$$Competitive Release_i = \sum \frac{Size_j}{Distance_{ij}}$$

To test Hypothesis 1 (i.e., MUs exhibit higher growth rates than the subsidiaries of the NWUs at higher levels of competitive release), we interacted the *Competitive Release* variable with the dummy *MU* which is coded as 1 if the focal firm is an MU and 0 if it is a subsidiary of the NWUs (*CompetitiveReleaseXMU*). In the remaining models, *Competitive Release* is entered as a control. The *Competitive Release* variable was log transformed because of its highly skewed distribution.

Intrinsic Appeal. To test Hypothesis 2, a variable that measures the extent to which the feature values of the MU identity are traceable in the local community was needed. Remember that localness and environmental friendliness emerged as the two salient identity features of MUs. To proxy *Localness*, we employed the voter turnout in county elections (for a discussion see the validity issues section). Regions where people care more about the development and well-being of the local community tend to exhibit higher voter turnout. The higher the voter turnout, the greater the fit with MU’s localness. Since county elections are held every 5 years, we filled the missing years through linear interpolation (see e.g. Boone,

Declerck, Rao and Van den Buys, 2012; Schneiberg and Bartley, 2001). We measured *Greenness* with the proportion of people in a county voting for the German Green Party in the Bundestag (the lower house of the federal parliament) election. Measuring this construct by using county elections is not possible as the Green Party does not have a candidate in every region. Bundestag elections are held every four years and linear interpolation was used for the missing years. It is worth noting the novelty of the measurement applied here. Although the recent theorization emphasizes audience perception rather than product (or producer) characteristics in determining appeal of an offer (Hannan et al., 2007), most of the existing empirical studies still rely on product (or producer) features (e.g. Hsu, 2006; Negro et al., 2010; Carroll et al., 2010).

Engagement. Engagement in terms of cooperation activities among MUs took various forms (Zeitung fuer Kommunale Wirtschaft, 2001; Energie & Management, 2005; Energie & Management, 2008). Shortly after deregulation, most cooperation agreements were inspired by economic reasoning such as collective purchasing electricity in order to increase their collective bargaining power. This form of cooperation is flexible and loose, as it requires little commitment. Cooperation activities of collective purchasing and trading were thus labelled *Economic Engagement*. The second category of cooperation activities took the form of collective marketing and sales. These activities represent commitment to the MU identity as they present MUs as a collective identity to audience members. We labelled these activities as *Form Identity Engagement*. Before the deregulation, there existed “division of labor” among the electricity firms on the national, regional and municipal levels in the (West) German electricity industry despite that they all serve end customers in their respective monopoly regions. The nationwide firms with large-scale power plants generated electricity and sold it to the regional utilities; regional utilities then distributed it to municipal utilities which then sell to end customers (FES 1991, Brandt 2006, Krisp 2007). Therefore, MUs had

very little generation capacity, and therefore limited independence from the NWUs (Energie & Management, 2005; Energie & Management, 2008). To preserve their independence, MUs engaged in building collective power plants and started to share the generation capacity. As this form of cooperation represents the most genuine commitment to the MU identity, we labelled it *Local Independence Engagement*.

Building on this categorization, we created the variable *Engagement* in a way that takes a larger value with increasing commitment to the MU identity. In particular, the variable takes the value of 1 when the focal MU does not engage in any cooperation activities and the value of 2, 3, 4 if it engages in *Economic Engagement*, *Form Identity Engagement* and *Local Independence Engagement*, respectively. Our coding is also inspired by the developmental stages of each type of cooperation, as discussed by industrial experts (Energie & Management, 2005; Energie & Management, 2008). The variable is coded the highest in presence of multiple cooperation activities at the same time. For example, if an MU engages in both *Economic Engagement* and *Local Independence Engagement* in a given year, we assign a value 4 to the *Engagement* variable.⁴ All independent variables were lagged of one year to control to avoid reverse causality.

Control Variables

Several control variables were included in our models. We control for MU density and density squared at the district level⁵ (*MU Density*, *MU Density*²) as density might be negatively linked to firm growth (see Barnett and Carroll, 1987). Furthermore, we controlled for population per sqkm (*Population Density*) because population density tend to increase electricity retail sales. More densely populated areas are considered in the industry as “fillet pieces” which are more profitable (Stuttgarter Nachrichten, 2010). We also controlled for the

⁴ The results obtained for each type of cooperation agreement suggest that *Economic Engagement* and *Local Independence Engagement* exhibit the strongest effects on growth rates.

⁵ We also experimented with controlling for density and density squared at the state level obtaining very similar results to those discussed below.

average *Population Age* and the average *Disposable Income* of a county since both factors impact electricity demand (see Tonn and Eisenberg, 2006; Hamza and Gilroy, 2011). The municipal debt level (*Municipal Debt*) in the focal area was controlled for as well as the amount of *Electricity Usage* defined in terms of the aggregated electricity usage by all tariff customers in Germany in a given year. We log-transformed the control variables except the two density ones to reduce the skewness of their distributions. Last, calendar year was added to the models to account for temporal variations in demand. Table 1 and 2 present the descriptives and the bivariate correlations of the variables used in the models.

Insert Table 1 and 2 about here

Model Specification

One of the most commonly used growth models is the one proposed by Gibrat, which assumes size-independent growth (but see Barnett and Carroll, 1987; Barron, West & Hannan, 1995). Following previous studies (e.g. Sorensen, 1999; Greve, 2008), we model the firm growth rates as a function of a firm's size and a number of covariates:

$$\frac{S_{i,t+1}}{S_{it}} = S_{it}^{\alpha-1} \exp(\beta x_{it} + \varepsilon_{i,t+1})$$

where S is firm size, α is an adjustment parameter indicating the dependence of growth on size, and β is a vector of parameters characterizing the influence of organizational and environmental covariates.

By transforming the equation into its natural logarithm, we obtain the following log-linear model which can be estimated using linear regression:

$$\ln(S_{i,t+1}) = \alpha \ln(S_{it}) + \beta x_{it} + \varepsilon_{i,t+1}$$

We use least square dummy variable regression models which include a dummy variable for each firm to isolate unobserved differences across firms (see also Sorensen, 1999; Greve, 2008). Similarly, we also added dummy variables at the county level to control the unobserved heterogeneity across communities. Since the test of the first hypothesis employs a time-constant covariate (i.e., the MU dummy), random effects estimates are reported.

Results

Table 3 provides the results obtained when testing Hypothesis 1. Model 1 shows the random effects model which includes only control variables. The estimates obtained for the controls are as expected: the size of the previous year (*Lagged Size*) is a strong predictor of next year size. The estimate of the lagged size variable – very close to 1 – suggests the existence of a process of proportional growth in our context (i.e., growth independent from firm size). As processes of proportional growth are associated with skewed patterns in the distribution of firms' size, we read this result as suggesting the existence of systematic and stable size differences across the firms included in our sample – i.e., a possible indication of durable resource partitioning. *Population Density* exhibits a positive and significant effect on growth rates, similar to that of *Electricity usage*. Surprisingly, lower *Disposable income* and higher *Municipal debt* lead to higher growth rates. The effects of *MU Density* and *MU Density*² fail to reach statistical significance. Model 2 shows that, on average, MUs grow less than the subsidiaries of NWUs. In Model 3 we find however support to H1: the larger the competitive release, the higher benefits of MUs compared to subsidiaries of NWUs.

Insert Table 3 and 4 about here

Our argument is that two sociologically relevant factors may contribute to modify the equilibrium in the size distribution of this industry: identity matching to local preferences and variations of identity claims across firms. A first test of the relevance of matching to local preferences is provided in Model 4 when county-specific dummy variables are added. In this model specification, the significant interaction between competitive release and MU dummy loses statistical significance. We interpret this result as suggesting that growth rates do not happen at random but they are driven by (unobserved) county specific characteristics that point to the existence of geographic heterogeneity in the growth rates of MUs. As the challenge to the equilibrium inherent to resource partitioning comes from the success of peripheral organizations, we focus the remaining analyses on the subsample of MUs and investigate the importance of firm-level endowments through a fixed effects specification that allows isolating unobserved and time-invariant differences among MUs.

Table 4 shows the estimates of the LSDV models for the growth rates of the MUs from 2001 to 2008. Model 2 tests Hypothesis 2 concerning the impact of intrinsic appeal (i.e., matching) on the growth rates of MUs. As expected, the two dimensions of MU identity (i.e., *Localness* and *Greenness*) exhibit a positive and significant effect on the growth rates of MUs. H2 therefore is strongly supported. Model 3, through the addition of the *Engagement* variable, tests H3. As expected, engagement activities that signal greater commitment to local communities exhibit a positive and significant effect on MU growth rates. Model 4 tests H4 predicting that a higher engagement will reinforce the effects of intrinsic appeal on growth rates. Both interaction effects are positive and significant, strongly supporting H4. Interestingly, the positive and significant main effect of engagement now turns negative and significant. This finding indicates that at a hypothetical value of zero of intrinsic appeal, increasing engagement reduces organizational growth rates. Last, notice that the coefficient of lagged size is now pointing to a much faster growth pattern among small firms.

The growth of peripheral firms represents a possible challenge to the size differences across organizational forms, but a more serious threat may also come from the increasing fragmentation of the market periphery – i.e., from the dilution of the perceived homogeneity of the market periphery. We explore this issue through the additional analyses reported in Table 5. While increasing localness and greenness on average appear to reward MUs, the size of a MU is determinant in driving the appropriation of such rewards: while size amplifies the positive effect of *Greenness* on the growth rates of MUs, the opposite holds true with respect to *Localness*. These findings suggest that resource partitioning is taking place differently in the two extremes of the size distribution of peripheral firms: while greenness rewards mid-/big sized MUs, localness is primarily rewarding smaller MUs. Interestingly, the fact that localness constrains organizational growth resonates with the qualitative evidence collected. Local audiences who are strongly attached to their communities exhibit strong resistance against the expansion of their local MUs. Indeed, the ifm study (2006) shows that the MUs following an aggressive growth strategy by acquiring customers outside of the local community are perceived as “cold expansionists”. Local customers “cannot identify themselves with the new size of their MUs”. The potential changes necessary for growth might be perceived by local citizens as “too cold” or “too business like”. In this way, the expansion of MUs in may be at risk of losing its cozy and familial identity – see also Figure 1. The ifm study identifies this as the “uprooting” problem and warns that expansion will be paid with considerable loss in the home territory due to “decreasing identification” of the local customers.

 Insert Table 5 about here

Validity Issues

In this section, we address issues of construct and internal validity and carry out a

series of robustness checks and additional analysis. Concerns of construct validity may involve the *Localness* – whereas we consider the operationalization of *Greenness* more intuitive. The determinants of voter turnout have been extensively studied by political scientists. In this respect, the literature seems to converge on three types of explanations (Blais, 2006; but also see Geys, 2006): (1) institutions; (2) party systems and electoral outcomes and (3) socioeconomic environment. Therefore it is legitimate to question to which extent voter turnout at county level elections measures local attachment. An alternative measure was therefore employed to test the robustness of our results: differences in county level voter turnout between local and national level elections in each county. When considering that differences in turnout are driven by socioeconomic factors, the following factors are routinely mentioned (Geys, 2006; Henderson and McEwen, 2009): (1) social pressure to participate; (2) genuine attachment to the local communities. As there is no reason to believe that social pressure should be higher in the same county for different types of elections, any difference in turnout between local and national elections should thus capture local attachment (i.e., localness). Table 6 shows the results obtained for the same set of models when employing this alternative measure of localness. The estimates obtained by this procedure resemble those reported in Table 4.⁶

Insert Table 6 about here

Three further robustness checks were carried out. In Table 7 we report the test of H1 using GEE models with exchangeable correlation structure. Table 8 shows the test of H2 to H4 applying a fixed-effect estimator (XTREG in Stata 12), and manually adding county

⁶ It has been argued that firm growth rates decrease with age (Harrison, 2004). However, information of organizational age is missing for over 60 firms in our data. Adding age control would decrease the number of observations by over 500 and we thus decided to drop the age control here. Actually firm age does not seem to matter much since models controlling for firm age (available upon request) exhibit very similar results. We think this is due to the fact that the average organizational age is very high (>60 years).

dummies. The results obtained from both these procedure appear comparable to those of Table 3. It is worth pointing out that the R^2 (within) increases significantly from Model 1 to Model 4 in Table 8 further suggesting the relevance of our variables in capturing the variations in the growth rates of peripheral firms. Our theoretical arguments imply that the hypothesized effects of H2 to H4 should apply primarily in the household customer segment rather than in the industrial and commercial customers segments. As the models reported in Table 9 indicate, the postulated effects appear either non-significant or much weaker when focusing on industrial and commercial segments.

Insert Table 7, 8 and 9 about here

Last, additional qualitative evidence is used to address internal validity issues and, in particular, to rule out a series of alternative explanations. For example, customers may not prefer the identity of MUs, but rather the customized services they offer. However, data shows that around 70% of the household customers never had any direct contact with their electricity suppliers (BDEW household customer survey, 1999 to 2006). Thus, the feeling of good services is mainly psychological and rooted in the emotional attachment to MUs. Furthermore, Figure 2 clearly indicates that private utilities such as NWUs are perceived as exhibiting more “customer orientation” than MUs. The inertia in switching operators may well be an alternative explanation for vitality of MUs. The BDEW household customer surveys (1999 to 2006) however indicates that it is not the case. The proportion of customers who do not switch suppliers because “I have a close relationship with my current supplier, which I do not want to give up” has jumped from 35% in 1999 to around 80% in 2001 and remained relatively stable afterwards. In contrast, the proportion of customer fearing “high efforts involved in switching” and “risk of lower supply security” has been much lower at around 40%. Notice that the 1999-2001 period was the one in which several regional utilities

have perished and the identities of MUs and NWUs started to be increasingly perceived as oppositional.

Discussion and Conclusions

Drawing inspiration from the limitations of existing research on resource partitioning (Carroll, 1985; Carroll and Swaminathan, 2000) and by relying on recent developments in organization ecology (Hannan et al., 2007), we aimed at improving our understanding of the processes of identity-based partitioning by focusing on organizational growth rates. Our main goal was to explore the determinants and challenges to the organizational diversity generated by competitive release and, thus, by identity-based resource partitioning. To reach this goal, we employed qualitative and quantitative evidence and explored the growth rates of German electricity firms.

We propose that besides freeing resource, competitive release resulting from the downfall of the near-center producers contributes to increase the contrast between the identity of center and peripheral organizations. Therefore, competitive release on average benefits more the organizational growth rates of peripheral organizations than those of the subsidiaries of the center organizations. However, the beneficial effect of competitive release is not uniform across peripheral organizations due to their heterogeneity in terms of identity claims and of matching to local preferences: peripheral producers that enjoyed a greater match between their identity and local preferences grew faster. We also found that those firms that made credible identity claims by participating in cooperative activities exhibited higher growth rates. In addition, engagement reinforced the benefits of intrinsic appeal with respect to firm growth rates. While increasing growth rates capture well the success of MUs, traces of fragmentation of the market periphery appear evident from some of our additional analyses.

Our model differs from the existing research on identity based resource partitioning in two ways. First, Carroll and Swaminathan (2000) focused on a market initially populated by a single producer segment, namely smaller generalists. Following the mass exit of smaller generalists defeated in the “war” based on economies of scale, larger generalists were unable and uninterested in covering the whole market. Resource demand at the periphery remained unsatisfied and specialists were founded to occupy these empty niches. Therefore, Carroll and Swaminathan’s (2000) argument hinges upon unsatisfied demand. Conversely, our model does not require unsatisfied demand. We started with a market populated by three sub-segments and the exit of the middle segment increases identity salience of the peripheral form for the peripheral audience. As a consequence of the emergence of separate and oppositional identities, meaningful boundaries between center and peripheral forms get established. In this respect, our model extends the applicability of resource partitioning from one-segment market to multiple-segment market and relax the requirement of unsatisfied demand at periphery. Second, in the microbrewery study, a social movement among the new specialist breweries is necessary to “artificially” construct an oppositional identity, in order to cement the boundaries and achieve “durable resource partitioning” (Polos et al., 2010). In our model, oppositional identities between center and periphery arise more “automatically” as a result of the downfall of the near-center producers. Thus, according to our arguments, a social movement is not necessary to trigger identity based resource partitioning. Note that collective actions were initiated in our context, but they did not took the same form as the ones described by Carroll and Swaminathan (2000).

Furthermore, our results add to the recent revision of resource partitioning theory (Polos et al., 2010). The theoretical model of Polos and colleagues focuses mainly on the audience side effect of competitive release, namely the matching part of our model. They argue that even in presence of competitive release, unless a separate and oppositional identity

is perceived by audience members, partitioning is not sustainable. This is because the center producers can expand their appeal by making use of their large budgets. Only when an oppositional schema of the peripheral form emerges, a durable partitioning arises. In case of two oppositional schemas, high grade of membership in one category precludes the possibility that the engagement in the oppositional category will generate actual appeal. We argue that competitive release does not only affect audience perception, but also producers' actions, by stimulating cooperation activities. Interestingly, the actions oriented at consolidating the existence of an oppositional identity may also contribute to dilute it. For instance, the results reported in Table 5 suggest that, in our context, the market periphery is becoming increasingly fragmented. In general, while intrinsic appeal enhances organizational vitality, the growth of peripheral organizations may contribute to challenge their authenticity. Future research should investigate the tension between size and growth rates during partitioning processes and the effects of increased fragmentation of market peripheries. How much the individual success of peripheral organizations comes at the expenses of diluting their collective identity? As a durable resource partitioning implies a state of equilibrium that -- if rooted into size differences -- it may be challenged by the growth of peripheral firms and by the increased fragmentation of market periphery.

Last, the present paper contributes to research on organizational diversity driven by form identity as follows. First, to the best of our knowledge, our paper represents the first empirical test of the mechanism of competitive release – and partly responds to the call of Hannan and colleagues' (2007: 227) for innovative empirical tests of partitioning that depart from concentration. Second, our paper moves the locus of attention of partitioning studies from differences among producers (e.g., size, niche width) to the consideration of differences in relation to cognition and preferences of audience members. Indeed, the majority of research has treated resource partitioning as a rather uniform process across audience

segments. Recent empirical efforts suggest that this might not be the case (Boone, Carroll & Van Witteloostuijn, 2002; Greve, Pozner & Rao, 2006). In the present study we further contribute to this on-going discussion by mapping the heterogeneity of audience preferences along geographical communities (Hannan et al., 2007: 302-303). By studying audience heterogeneity through the lens of geography, we contribute also to the theoretical development on organizational identity by exploring the possible determinants of audience structure and heterogeneity (see Kocak, Hannan & Hsu 2010). Third, our study contributes to the general discussion on organizational diversity. For the cyclical processes of concentration and diversity to take place, the dominant firm's ability to co-opt the peripheral organizations is crucial. For example, the process of re-concentration observed in the field of popular music industry from 1970 to 1973 resulted from the successful strategies of the majors such as Warner to buy independent companies (Peterson and Berger, 1975). Our study shows that until such boundary crossing is impeded by the existence of clear identity differences (i.e., clear "lines of demarcation", as Durkheim (1893) put it), the manifestation of cyclical changes of diversity and homogeneity may be hindered.

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FIGURE 1:

The NWUs representing the confusing market (left side) and the “own municipal utilities” (right side) (Source: ifm 2006)

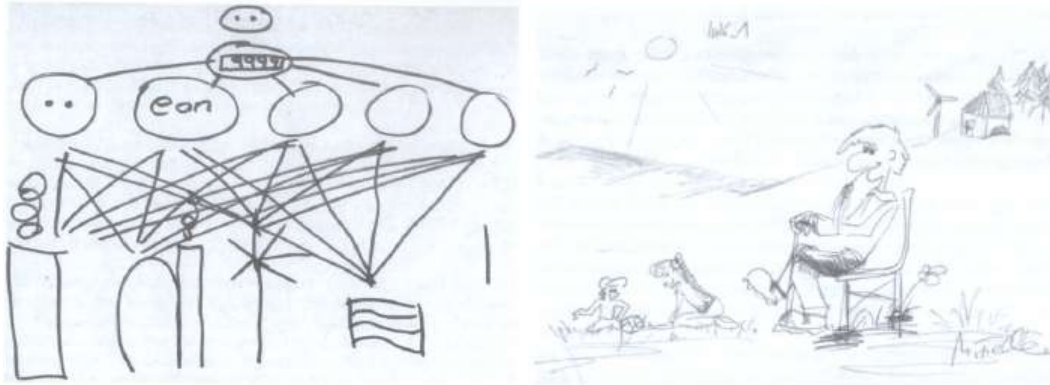


FIGURE 2.

The oppositional images of MUs and private utilities (Source: TNS Emnid survey 2009)

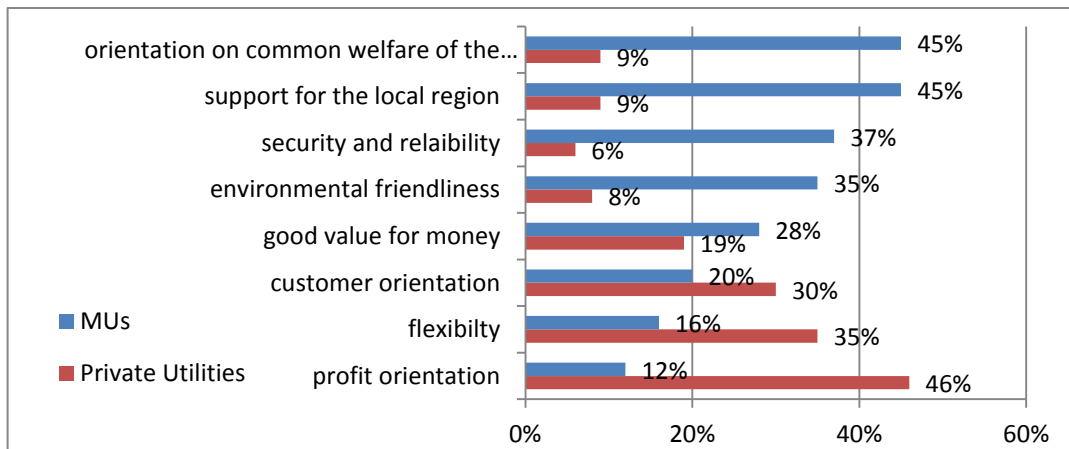


TABLE 1
Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Size (log)	4278	10.55	1.42	2.94	16.60
Lagged Size (log)	4277	10.55	1.41	2.94	16.60
Competitive Release	7054	4.66	5.53	0.01	16.89
MU	7056	0.97	0.16	0.00	1.00
Localness	5873	0.57	0.08	0.32	0.81
Greenness	6363	0.07	0.03	0.02	0.23
Engagement	6468	1.83	1.10	1.00	4.00
Year	7056	2002.50	3.45	1997.00	2008.00
Population Age (log)	6445	3.74	0.04	3.61	3.89
Population Density (log)	6412	5.54	0.96	3.66	8.35
MU Density	6468	79.42	46.57	0.00	154.00
MU Density ² /1000	6468	8.48	8.32	0.00	23.72
Disposable Income (log)	6226	9.71	0.14	9.29	10.16
Municipal Debt (log)	6367	11.98	0.73	7.27	15.04
Electricity Usage (log)	7056	18.38	1.89	12.09	19.01

TABLE 2
Bivariate Correlations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Size (log)	1.00														
2. Lagged Size (log)	0.97	1.00													
3. Competitive Release	-0.01	-0.01	1.00												
4. MU	-0.40	-0.41	0.01	1.00											
5. Localness	-0.36	-0.36	0.09	0.10	1.00										
6. Greenness	0.29	0.29	-0.08	-0.10	-0.20	1.00									
7. Engagement	-0.09	-0.08	-0.05	0.13	0.16	0.06	1.00								
8. Year	0.01	0.01	-0.67	-0.03	-0.14	0.09	0.08	1.00							
9. Population Age (log)	0.09	0.09	-0.23	-0.03	-0.41	-0.27	-0.19	0.36	1.00						
10. Population Density (log)	0.61	0.61	0.01	-0.15	-0.44	0.55	-0.08	-0.01	0.09	1.00					
11. MU Density	-0.04	-0.05	-0.02	0.00	0.58	0.15	0.23	0.01	-0.43	0.03	1.00				
12. MU Density ² /1000	-0.07	-0.07	-0.02	0.00	0.61	0.06	0.21	0.01	-0.36	-0.02	0.98	1.00			
13. Disposable Income (log)	0.11	0.11	-0.20	-0.03	0.12	0.58	0.12	0.28	-0.25	0.36	0.47	0.38	1.00		
14. Municipal Debt (log)	0.32	0.33	0.01	-0.15	-0.18	0.30	-0.13	-0.01	-0.06	0.37	-0.07	-0.12	0.17	1.00	
15. Electricity Usage (log)	0.02	0.02	-0.07	-0.01	-0.02	0.03	0.02	0.24	0.09	0.01	0.02	0.03	0.05	-0.03	1.00

TABLE 3

Random Effect Models of Growth Rates of NWUs and MUs, 2001-2008

VARIABLES	(1) Base	(2)	(3) H1	(4) Add County Dummies
Lagged Size (log)	0.90165*** (0.030)	0.88731*** (0.034)	0.88781*** (0.034)	0.7881*** (0.060)
Competitive Release		0.0059 (0.0016)	-0.0046 (0.0033)	-0.0034 (0.003)
MU		-0.2969** (0.136)	-0.3288** (0.125)	-0.498*** (0.193)
Competitive ReleaseXMU			0.005* (0.003)	-0.004 (0.003)
Year	0.00212 (0.003)	-0.003 (0.004)	-0.003 (0.004)	-0.0169* (0.008)
Population Age (log)	-0.1562 (0.168)	-0.1652 (0.1716)	-0.1600 (0.1715)	-0.0231 (0.8402)
Population Density (log)	0.0913*** (0.0288)	0.0981*** (0.030)	0.0980*** (0.031)	0.0391 (0.208)
MU Density	-0.00013 (0.001)	-0.0001 (0.0001)	-0.0001 (0.0001)	-0.011 (0.0089)
MU Density ² /1000	0.0006 (0.005)	0.0002 (0.004)	0.0003 (0.004)	0.0446 (0.031)
Disposable Income (log)	-0.14815** (0.068)	-0.1487** (0.070)	-0.1459** (0.070)	0.9638** (0.335)
Municipal Debt (log)	0.0242* (0.012)	0.0209* (0.012)	0.0209* (0.012)	0.0491 (0.046)
Electricity Usage (log)	0.9569** (0.464)	0.9330** (0.422)	0.929** (0.422)	0.916** (0.428)
Constant	-20.16061* (10.541)	-21.277 (14.102)	-21.111 (14.088)	9.766** (12.617)
Observations	3,454	3,454	3,454	3,454
R-squared	0.981	0.981	0.981	0.982
df_m	9	11	11	154

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

TABLE 4

Least Square Dummy Variables Models of Growth Rates of the MUs, 2001-2008
(Size in Household Customer Segment)

VARIABLES	(1) Base	(2) H2	(3) H3	(4) H4
Lagged Size	0.24327 (0.164)	0.39177*** (0.150)	0.39149*** (0.150)	0.38981*** (0.150)
Localness		1.37243** (0.574)	1.35550** (0.571)	0.36275 (0.614)
Greenness		2.45761** (1.011)	2.54843** (1.023)	1.33080 (1.175)
Engagement			0.01391** (0.007)	-0.30797** (0.131)
LocalnessXEngagement				0.49582** (0.222)
GreennessXEngagement				0.66201** (0.294)
Competitive Release	-0.00022 (0.002)	0.00060 (0.002)	0.00060 (0.002)	0.00067 (0.002)
Year	-0.00225 (0.008)	0.00809 (0.009)	0.00642 (0.009)	0.00742 (0.009)
Population Age (log)	-1.63028* (0.890)	-1.77782* (1.038)	-1.68431 (1.029)	-1.88943* (1.108)
Population Density (log)	0.04107 (0.236)	-0.30827 (0.255)	-0.30781 (0.254)	-0.35782 (0.264)
MU Density	0.03249** (0.014)	0.04216** (0.017)	0.04221** (0.017)	0.04145** (0.017)
MU Density ² /1000	-0.11377** (0.050)	-0.14869** (0.059)	-0.14902** (0.059)	-0.14718** (0.060)
Disposable Income (log)	0.73298*** (0.261)	0.46558* (0.270)	0.47397* (0.271)	0.49869* (0.275)
Municipal Debt (log)	0.01400 (0.030)	-0.00333 (0.033)	-0.00455 (0.033)	-0.00210 (0.033)
Electricity Usage (log)	0.86638** (0.357)	0.27424 (0.274)	0.27318 (0.274)	0.27071 (0.273)
Constant	-7.34757 (13.014)	-12.15790 (12.873)	-9.24609 (13.019)	-9.62736 (13.167)
Observations	3,388	3,224	3,224	3,224
R-squared	0.955	0.962	0.962	0.962
df_m	542	536	537	539

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

TABLE 5**Least Square Dummy Variable Models of Growth Rates of the MUs, 2001-2008**

VARIABLES	(1)	(2)
Lagged Size (log)	0.21904 (0.310)	0.02165 (0.322)
Localness	7.55307* (3.942)	5.57602 (3.757)
Greenness	-59.33442*** (22.068)	-46.90352*** (16.720)
LocalnessXSize	-0.59188* (0.358)	-0.41995 (0.341)
GreennessXSize	5.67084*** (2.039)	4.52610*** (1.530)
Engagement		-1.00913** (0.421)
EngagementXSize		0.09070** (0.037)
log_lag_weighted_proxi	0.00063 (0.002)	0.00091 (0.001)
Year	-0.01795 (0.013)	-0.02357* (0.013)
Population Age (log)	1.45653 (1.420)	2.21996 (1.488)
Population Density (log)	0.13563 (0.243)	0.21968 (0.249)
MU Density	0.03205** (0.016)	0.03250** (0.016)
MU Density2/1000	-0.10826* (0.059)	-0.10969* (0.058)
Disposable Income (log)	0.98461*** (0.303)	0.92109*** (0.294)
Municipal Debt (log)	0.00550 (0.033)	-0.00323 (0.031)
Electricity Usage (log)	0.29984 (0.274)	0.29242 (0.269)
Constant	19.56405 (16.591)	30.46590* (18.312)
Observations	3,224	3,224
R-squared	0.963	0.964
df_m	538	540

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

TABLE 6

Additional Analysis 1. Least Square Dummy Variables Models of Growth Rates of the MUs, 2001-2008 (Using an Alternative Measure of Localness)

VARIABLES	(1) log_SalesHC	(2) log_SalesHC	(3) log_SalesHC	(4) log_SalesHC
Lagged Size (log)	0.24327 (0.164)	0.39340*** (0.150)	0.39311*** (0.150)	0.39308*** (0.150)
Localness Alternative		0.86149** (0.351)	0.84709** (0.349)	0.23701 (0.454)
Greenness		1.85631** (0.922)	1.95634** (0.932)	1.28063 (1.182)
Engagement			0.01393** (0.007)	0.06737 (0.045)
Localness AlternativeXEngagement				0.31726* (0.175)
GreennessXEngagement				0.28354 (0.292)
Competitive Release	-0.00022 (0.002)	0.00078 (0.002)	0.00078 (0.002)	0.00080 (0.002)
Year	-0.00225 (0.008)	-0.00154 (0.009)	-0.00310 (0.009)	-0.00155 (0.010)
Population Age (log)	-1.63028* (0.890)	-1.47623 (1.019)	-1.38675 (1.012)	-1.51796 (1.074)
Population Density (log)	0.04107 (0.236)	-0.31410 (0.255)	-0.31263 (0.255)	-0.40002 (0.273)
MU Density	0.03249** (0.014)	0.04138** (0.016)	0.04145** (0.016)	0.04045** (0.016)
MU Density ² /1000	-0.11377** (0.050)	-0.14594** (0.059)	-0.14633** (0.059)	-0.14301** (0.059)
Disposable Income (log)	0.73298*** (0.261)	0.34736 (0.262)	0.35791 (0.263)	0.30208 (0.263)
Municipal Debt (log)	0.01400 (0.030)	-0.00529 (0.033)	-0.00648 (0.033)	-0.00686 (0.033)
Electricity Usage (log)	0.86638** (0.357)	0.25054 (0.275)	0.25020 (0.275)	0.24030 (0.276)
Constant	-7.34757 (13.014)	8.78305 (14.545)	11.42332 (14.826)	10.26317 (14.854)
Observations	3,388	3,224	3,224	3,224
R-squared	0.955	0.961	0.961	0.962
df_m	542	536	537	539

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

TABLE 7**Additional Analysis 2. GEE Models of Growth Rates of the NWUs and MUs, 2001-2008 (Robustness Check for H1)**

VARIABLES	(1) Base	(2)	(3) H1
Lagged Size (log)	0.98286*** (0.006)	0.97759*** (0.010)	0.97756*** (0.010)
Competitive Release		0.00302 (0.002)	-0.00654 (0.005)
MU		0.00654 (0.060)	-0.08173* (0.043)
Competitive ReleaseXMU			0.00976** (0.005)
Year	0.00014 (0.003)	-0.01381 (0.010)	-0.01375 (0.010)
Population Age (log)	-0.13733* (0.082)	-0.22019* (0.118)	-0.22224* (0.119)
Population Density (log)	0.01928*** (0.007)	0.02918*** (0.010)	0.02929*** (0.010)
MU Density	-0.00013 (0.000)	-0.00097 (0.001)	-0.00098 (0.001)
MU Density ² /1000	0.00050 (0.002)	0.00523 (0.004)	0.00528 (0.004)
Disposable Income (log)	-0.05466* (0.033)	-0.05145 (0.040)	-0.05143 (0.040)
Municipal Debt (log)	0.00254 (0.006)	0.00495 (0.009)	0.00486 (0.009)
Electricity Usage (log)	0.94991** (0.458)	3.50986 (3.484)	3.51413 (3.482)
Constant	-17.14591* (9.900)	-37.39715 (47.502)	-37.50361 (47.472)
Observations	3,454	2,605	2,605
Number of firm	551	550	550
chi2	142016	89267	127050
df_m	9	11	12

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

TABLE 8**Additional Analysis 3. Fixed Effects Models of Growth Rates of the NWUs and MUs, 2001-2008 (Robustness Check for H2 to H4)**

VARIABLES	(1) Base	(2) H2	(3) H3	(4) H4
Lagged Size (log)	0.24327*** (0.086)	0.39177** (0.157)	0.39149** (0.157)	0.38981** (0.156)
Localness		1.37243* (0.797)	1.35550* (0.794)	0.36275 (0.502)
Greenness		2.45761* (1.298)	2.54843* (1.311)	1.33080 (1.470)
Engagement			0.01391** (0.006)	-0.30797** (0.154)
LocalnessXEngagement				0.49582* (0.267)
GreennessXEngagement				0.66201** (0.319)
Competitive Release	-0.00022 (0.001)	0.00060 (0.002)	0.00060 (0.002)	0.00067 (0.002)
Year	-0.00225 (0.007)	0.00809 (0.008)	0.00642 (0.008)	0.00742 (0.008)
Population Age (log)	-1.63028* (0.862)	-1.77782* (0.975)	-1.68431* (0.958)	-1.88943* (1.054)
Population Density (log)	0.04107 (0.236)	-0.30827 (0.385)	-0.30781 (0.384)	-0.35782 (0.397)
MU Density	0.03249** (0.015)	0.04216** (0.019)	0.04221** (0.019)	0.04145** (0.019)
MU Density ² /1000	-0.11377** (0.053)	-0.14869** (0.067)	-0.14902** (0.067)	-0.14718** (0.068)
Disposable Income (log)	0.73298*** (0.268)	0.46558** (0.200)	0.47397** (0.202)	0.49869** (0.211)
Municipal Debt (log)	0.01400 (0.032)	-0.00333 (0.039)	-0.00455 (0.039)	-0.00210 (0.039)
Electricity Usage (log)	0.86638** (0.381)	0.27424 (0.267)	0.27318 (0.267)	0.27071 (0.266)
Constant	-7.05260 (11.089)	-14.30870 (12.181)	-11.37543 (12.046)	-11.88233 (12.277)
Observations	3,388	3,224	3,224	3,224
Number of firm	551	550	550	550
R-squared	0.075	0.170	0.171	0.172

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

TABLE 9

Additional Analysis 4. Least Square Dummy Variable Models of Growth Rates of the NWUs and MUs, 2001-2008 (Size in Industrial and Commercial Customer Segment)

VARIABLES	(1) log_SalesHC	(2) log_SalesHC	(3) log_SalesHC	(4) log_SalesHC
Lagged Size (log)	0.30652** (0.139)	0.42571*** (0.117)	0.42543*** (0.118)	0.42453*** (0.117)
Localness Alternative		1.06438 (0.655)	1.05442 (0.653)	0.10108 (0.733)
Greenness		-3.08318** (1.263)	-3.02613** (1.276)	-2.02840 (1.789)
Engagement			0.00861 (0.013)	-0.20768 (0.161)
Localness AlternativeXEngagement				0.46479* (0.257)
GreennessXEngagement				-0.38669 (0.577)
Competitive Release	0.00175 (0.002)	0.00189 (0.002)	0.00189 (0.002)	0.00186 (0.002)
Year	0.01013 (0.011)	0.01547 (0.011)	0.01442 (0.011)	0.01680 (0.012)
Population Age (log)	-2.10065* (1.129)	-1.67293 (1.189)	-1.61486 (1.183)	-2.19180* (1.257)
Population Density (log)	-0.34686 (0.293)	-0.53673 (0.332)	-0.53661 (0.332)	-0.55116 (0.337)
MU Density	0.01656 (0.015)	0.02022 (0.018)	0.02024 (0.018)	0.02134 (0.018)
MU Density ² /1000	-0.07002 (0.055)	-0.08074 (0.064)	-0.08090 (0.064)	-0.08538 (0.065)
Disposable Income (log)	-0.03628 (0.358)	0.01947 (0.400)	0.02491 (0.400)	0.11713 (0.403)
Municipal Debt (log)	-0.01060 (0.035)	-0.01532 (0.039)	-0.01610 (0.038)	-0.01316 (0.038)
Electricity Usage (log)	-1.28487*** (0.425)	-1.80455*** (0.344)	-1.80514*** (0.345)	-1.79625*** (0.344)
Constant	19.37157 (16.728)	15.40636 (17.190)	17.23063 (17.329)	13.82393 (17.535)
Observations	3,342	3,187	3,187	3,187
R-squared	0.953	0.959	0.959	0.959
df_m	530	526	527	529

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1